**Yihan (Hank) Tang**

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https://hank-tang.github.io

**PROFESSIONAL SUMMARY**

I am an enthusiast in AI for Healthcare. In my previous research experience, I have applied Deep Learning, Knowledge Graph, Natural Language Processing, and multimodal learning to build clinical predictive models for Electronic Health Records and genomic data. I am proficient in Python, PyTorch, and R.

**EDUCATION**

**The University of Hong Kong, Hong Kong SAR** Expected May 2026

BASc in Applied Artificial Intelligence, GPA: 3.80

*Relevant Coursework*: Artificial Intelligence, Python, C++, Shell, Linear Algebra, Multivariate Calculus, Linear Statistical Analysis, Data Visualization

**University of Illinois Urbana-Champaign, Champaign, IL** Jan 2025 – May 2025

Exchange studies. Computer Science, GPA: 4.0

**Stanford University, Palo Alto, CA** June 2023 - August 2023

International Honors Program (IHP), Stanford 2023 Summer Quarter

Concentration in Computer Science

**RESEARCH EXPERIENCE**

**Research Intern** April 2024 - Present

**Winter Lab, Feinberg School of Medicine, Northwestern University**

Advisor: Dr. Deborah Winter

* **Computational Genomics Research – Macrophage Transcriptomic Analysis**
  + Integrated bulk-RNA data from **24 internal datasets** spanning multiple studies to investigate macrophage gene expression across diverse conditions.
  + Conducted **large-scale gene co-expression and network analysis** involving over **20,000 genes**, enabling the identification of key regulatory modules and immune-related pathways.
  + Applied normalization, and batch correction techniques to ensure **cross-study comparability** and robust downstream analysis.
  + Leveraged tools such as **Cytoscape, and igraph** to construct, visualize, and interpret gene regulatory networks.

**Undergraduate Research Assistant** April 2024 - April 2025

**MedAI Lab, The University of Hong Kong**

Advisor: Dr. Lequan Yu

* CTPD: Cross-Modal Temporal Pattern Discovery for Enhanced Multimodal Electronic Health Records Analysis
  + Efficiently extract meaningful cross-modal temporal patterns across different time scales from multimodal Electronic Health Records (EHR) input.
  + Introduce novel loss functions for better cross-modal alignment to retain core information of each modality.
  + Implement 16 baseline models including temporal, language, and multimodal models on 2 clinical tasks and compare their performance with CTPD.
* Hierarchical ICD Code Pretraining with Internal and External Knowledge Bases
  + As first author, working on incorporating a clinical-domain knowledge base and an external knowledge base (LLM) to pretrain International Classification of Diseases (ICD) codes in a structured, hierarchical manner.
  + Projected to be the first work that pretrains ICD codes with multiple knowledge bases to achieve better representation of medical concepts.
  + Implement a pipeline that transforms raw medical data (MIMIC-III and MIMIC-IV) into organized and generalized token representation.
  + Replicate several related works, including TransformEHR and KG-FIT.

**PUBLICATIONS**

* Fuying Wang, Feng Wu, **Yihan Tang**, et al. CTPD: Cross-Modal Temporal Pattern Discovery for Enhanced Multimodal Electronic Health Records Analysis. ***Findings of the Association for Computational Linguistics: ACL 2025***. <https://doi.org/10.48550/arXiv.2411.00696>
  + Contribution: contributed to experiment; implemented baseline models; primary manuscript writing
* **Yihan Tang**, Fuying Wang, et al. Hierarchical ICD Code Pretraining with Internal and External Knowledge Bases*.* (Co-author; expect to be submitted in April 2025)
  + Contribution: Methodology; Data collection and analysis; Teamwork coordination

**PRESENTATIONS**

Summer Research Fellowship Poster Presentation 2024

* Title: Semantic EHR Transformer: Using transformer-based generative model with a semantic-enhanced ICD-coding system to improve clinical disease prediction.

**SCHOLARSHIP AND FELLOWSHIP**

C.V. Starr Scholarship, The Starr Foundation 2025

Recipient of Summer Research Fellowship (SRF), The University of Hong Kong 2024

HKU Worldwide Undergraduate Student Exchange Scholarship, The University of Hong Kong

2022

**HONORS AND RECOGNITIONS**

Dean’s Honors List, Faculty of Science, The University of Hong Kong (top 1%) 2024

Student Representative, Shun Hing College, The University of Hong Kong 2024

Student Peer Advisor, Faculty of Science, The University of Hong Kong 2024